Youngstown City Water Works
Filtration House
160 N. West Avenue
City of Youngstown
Mahoning County
Ohio

HAER No. OH-118-B

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Great Lakes Systems Office
1709 Jackson Street
Omaha, Nebraska 68102-2517

HAER
OHIO
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HISTORIC AMERICAN ENGINEERING RECORD

YOUNGSTOWN CITY WATER WORKS
FILTRATION HOUSE HAER No. OH-118-B

Location: 160 N. West Avenue
Youngstown
Mahoning County, Ohio

UTM: 17.528040.4550200
Quad: Youngstown, Ohio

Date of Construction: 1904-1905

Engineer: N. E. Hawkins

Architect: John S. Lewis

Present Owner: City of Youngstown
26 South Phelps St.
Youngstown, Ohio 34215

Present Use: Water Department Maintenance Garage

Significance: The Youngstown City Water Works is a technologically and historically significant industrial complex in Mahoning County. The facility was in operation from 1904 until 1932 and served as Youngstown's only pumping and water filtration station during this period. The complex was critical to the development of Youngstown during the early twentieth century, and is an important record of an early water pumping and purification plant. The filtration house is an integral element of the Youngstown City Water Works.

Project Information: The former Youngstown City Water Works will be redeveloped by the city as an office complex for city use. The three original buildings -- the pumping station, filtration house, and the machine shop --will be altered or demolished. Documentation of the water works complex to the standards of the Historic American Engineering Record prior to alteration or demolition was undertaken by the Center for Historic Preservation in April and May 1997 in an effort to record the municipal history of the city of Youngstown. The report will be donated to the Library of Congress.

Center for Historic Preservation
Youngstown State University
518 DeBartolo Hall
Youngstown, Ohio 44555

Architectural Description

The filtration house was constructed between 1904 and 1905. The main structure is a one story, t-shape building that measures 59' 14" across by 212' in length. The rear of the structure is two stories in height and consists of two rooms 100' in width. Attached to this main structure is a story irregular shaped boiler house 31' 9" by 45' by 29' by 58'.[1] The original gable roof of the filtration house was covered by 10" by 20" slate tiles. The filtration house is constructed of pressed brick in a common bond pattern with the use of pilasters for support.[2] The sandstone sills and lintels used in the structure were made locally. The filtration house originally house filtration basins made of poured cement. The basins measured 21' 1" across by 16' deep. Today the basins are covered by cement flooring.[3]

The west elevation of the filtration house originally housed a central two panel wooden door. Located on either side of the door were two 4/4 double hung wooden sash windows 8' 4" high by 4' wide. The sandstone window sills are 1' 2" by 4' long and 14½" deep. Above the windows are segmented arches with corbeled hoods. Separating the upper and lower level of windows are four rows of corbeled brick. The four upper level 1/1 double hung windows are 4' 2" by 2' and original in size. They are located directly in the center of the gable end and have segmented arches with corbeled hoods.[4]

Located on the south elevation are twelve 4/4 double hung wooden sash windows 8' 4" by 4'. Above the windows are segmented arches with corbeled hoods. The windows were above the basins inside filtration house. The windows are grouped in two's separating each bay of wall by a pilaster. Above the windows are four rows of corbeled brick. At the t-intersection the wall continues in the same pattern with four more windows. Leading to the gabled end are six 4/4 double hung wooden sash windows 8' 4" by 4' with segmented arches and corbeled hoods. Separating the upper and lower level of windows are four rows of corbeled brick. The four upper level 1/1 double hung windows, 4' 2" by 4', are located directly in the center of the gabled end with segmented arches and corbeled hoods. This pattern carries to the east elevation and the addition of the second story.[5]

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[1]Plan of Boiler House for Filter Plant, Youngstown, Ohio, Board of Service. September 1904, Youngstown City Water Works.

[2]Sanborn Fire Insurance Maps. New York: Sanborn Map and Publishing Company, 1928, Microfilm #77, Reel 56, Vol. 2, 202-03.

[3]Plan of Boiler House for Filter Plant, Youngstown, Ohio, Board of Service. September 1904, Youngstown City Water Works.

[4]Ibid.

[5]Ibid.

Located on the north elevation are twelve 4/4 double hung wooden sash windows which are 8' 4" by 4'. The windows have segmented arches, corbeled hoods, and sandstone sills. The windows are grouped in two's, separating each bay of wall by a pilaster. This pattern continues around the t-shape to the east elevation, and the addition of the second story. The north gabled end is the same as the south end.

The two story east elevation continues in the same pattern, however, the size of the second story windows changes. The second story windows are 2/2 double hung, with wooden sashes and sandstone sills. Above the windows are segmented arches and corbeled hoods. On the upper level of the gabled end are four 1/1, 4' 2" by 4', double hung wooden sash windows with sandstone sills, segmented arches and corbeled hoods. Directly after the gable is the continuation of the structure to the southeast side. This extension of the building housed a pump room for low-lift pump motors, a laboratory, an office, and provided storage for chemicals used in the filtration process.[6] The facade of the structure varies from the t-shape. The first story holds a wooden sliding door 20'by 20'. Located above the door is a six-pane, wooden sash window that is 4' by 2', and on the second floor is another window of the same size. Separating the bay of wall is a pilaster. To the left of the pilaster is a two-panel wooden door. Directly beside the door are two six-pane, wooden sash windows that are 4' by 2'. On the second story level there are two off-centered windows that are also 4' by 2', with four rows of corbeled brick above.[7]

Located on the east end of the structure is a centrally located passage way connecting a one story boiler house to the pump room. The passage way had central double wooden doors with a limestone lintel and sill. The boiler house is irregular in shape due to the location of train tracks directly beside the building. This irregular construction caused the brick work to resemble a zipper in structure on the north-west corner because the corner angle is less than ninety degrees. On the north elevation of the structure were four windows and two coal chutes. The 4' by 2' windows were 2/2 double hung with wooden sashes with sandstone sills and lintels. Located directly beneath the windows were 3' by 4' coal shutes. On the west side of the building, there is one window on each side of the passage way. The 4/4 double hung windows measure 7' 6" by 4' with wooden sashes and sandstone lintels and sills.[8]

Since its original construction the filtration house has undergone a series of changes. The most drastic changes to the structure has come from the elevation of the window level. They have been modified on the north side of the structure to 6' 3" by 4'. On the south side the windows have been bricked over and the ground level has been raised. The filtration basins were cemented over sometime before 1950. This elevated the floor level, and consequntly the windows and use of the basins were adjusted. On the south elevation this is most evident, because the walls of the structure were removed and five of the basins were turned into storage rooms. They are only accessible from the outside. The front or east facade has changed by

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[6]Youngstown Water Works, *Details of Existing Purification Plant*, January 1927, Youngstown City Water Works.

[7]Ibid.

[8]Ibid.

adding a paneled wooden door. The central doorway has been widened to accommodate the vehicles entering and leaving the garage.

Historical Evolution

Early Water Filtration in Youngstown, 1904-1916

In 1871, the Youngstown City Water Works was established. Originally, unfiltered water from the Mahoning River was pumped directly into people's homes.[9] This became less and less feasible as outbreaks of typhoid and other diseases were linked to the city's water supply. It became increasingly important to address this problem, and this was done when the water works implemented a water filtration process for purification.[10]

The filtration house was built in 1904 and put into operation in 1905. In 1906, the structure had a capacity of filtering ten million gallons of water daily. Equipment used in the filtration process included twelve filter bed holding ten million gallons of water; two settling basins holding 1, 120,000 gallons of water; a storage well holding 588,000 gallons of water; two ten million and one four million gallon capacity centrifugal pumps; one condenser pump; one air compressor; and two 125 horse power Stirling water tube boilers.[11] In 1913, plans to increase the purification capacity of the filtration house were developed. These plans included building a new larger pumping station and updating and enlarging the capacity of the already-in-use filtration house. Improvements were completed and the new facilities opened in 1916.[12]

Youngstown City Water Works, 1916-1932

The upgrades to the filtration house increased its filtering capacity to thirty million gallons of water daily. New settling basins had a capacity of 8,550,000 gallons and filtered water storage of 1,175,000 gallons.[13] Another addition was that of sixteen new filters. Additions to the original filter building were also made at this time.[14] The new system was put into use in 1916 and the

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[9]*Youngstown the City of Progress 1913.* (Youngstown Chamber of Commerce, 1913), 47. Manuscript Collection, Mahoning Valley Historic Society.

[10]Joseph G. Butler, Vol. 1. *History of Youngstown and the Mahoning Valley.* (Chicago and New York: Pub-Amer. Historical Society, 1921), 232.

[11]City Water Works Department, *A Souvenir of Opening Days May 10-11*, 1916, 3. Howard C. Aley Collection, Mahoning Valley Historical Society.

[12]Butler, *History of Youngstown and the Mahoning Valley*, 366.

[13]*A Souvenir of Opening Days*, 7.

[14]*Youngstown City of Progress 1913*, 49.

Mahoning River was condemned as a source of drinking water in 1917 by the Ohio Department of Health. The filtration and distribution of this water continued, however, until 1932.[15]

The process of filtration was as follows: Water was pumped directly from the Mahoning River through a large screen which separated any debris from the water. Water was then carried into the filter plant through a 48 inch intake conduit and several revolving screens which further filtered the water. The water then emptied into three solution feed tanks, each with a 4,000 gallon capacity, in which it was treated with lime for purification and alum, a coagulant. A series of pumps, including one twenty-five and two fifteen million gallon daily capacity motor driving low-lift pumps, carried the water from a suction well into one of two coagulation basins. From here, water was sent into the filtering room and was divided among 28 filter basins. Here the water was filtered through several layers of sand and pebbles. After the filtration process, the water left the filter plant and was held in a large covered clear water well.[16]

Due to the increased pollution of the Mahoning River, there was an effort to find a more suitable water supply for Youngstown.[17] This led to the creation of the Mahoning Valley Sanitary District which includes Youngstown and Niles.[18] Plans were set forth to establish a new water supply and this became Meander Reservoir which was used as the primary water source for Youngstown beginning in 1932. After the Meander Water Treatment Plant was put into operation, the filtration plant at the City Water Works ceased to perform the function of filtering the city's water.[19]

Since the Closing of the Youngstown City Water Works, 1932-1997

From its closing to the present day, the property had been used by the Youngstown Water Department for various purposes. According to the 1950 Sanborn map, the Boiler House became a place for tool storage, the Lime Warehouse was used for parts storage, the Pump Room was divided into two parts, a shop room and a room for traffic sign storage, and the filters in the Filtration Room were covered by a cement floor, making the Filtration Room into a

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[15]Youngstown City Water Department, *Youngstown H20,* Summer/Fall, 4. Vertical Files, Mahoning Valley Historical Society.

[16]Miriam S. Averbach, "Water Works Performs Tremendous Service for Youngstown." *Youngstown Vindicator*, 27 November 1927, sec. A, 9.

[17]Youngstown Water Works, *Details of Existing Purification Plant.*

[18]Ohio Water Service Company, *Youngstown's Water: The Story Behind the Proposed Berlin-Meander Project*, 1950, 1. Manuscript Collection, Mahoning Valley Historical Society.

[19]Donald D. Heffelinger, Mahoning Valley Sanitary District, *History of Meander*, 1964, 28.

garage.[20] A fire in the Machine Shop in 1941 was responsible for destroying most of the records dealing with the Filtration House.[21]

Sometime between 1950 and 1992, an addition was added onto the back of the filtration house to the left of the one-time Boiler Room for additional storage, but does not exist today. The date of construction, as well as destruction, was not found. Another addition in the rear of the building, which still exists today, was added sometime prior to 1992 as a paint booth.[22] Within the last five years, the one-time Lime Warehouse was split into two separate storage rooms. One is currently being used as a lunch room by the Water Department staff.

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[20]Sanborn Fire Insurance Maps. New York: Sanborn Map and Publishing Company, 1928 Map pasted up to 1950, Microfilm #77, Reel 57, Vol. 2, 202-03 .

[21]Eugene Leson, interview by Jason Leggett, Youngstown, Ohio, 21 April 1997.

[22]Sanborn Fire Insurance Maps. New York: Sanborn Map and Publishing Company, Based on 1928 map updated to 1992, Mahoning Valley Historical Society.

Sources of Information/Bibliography

A. Engineering Drawings

Drawings in the collection of the Youngstown City Water Department

1904, September, Plan of Boiler House for Filter Plant, Youngstown, Ohio, Board of Service, Youngstown City Water Works. One Sheet.

1927, January, Youngstown Water Works, Details of Existing Purification Plant, Youngstown City Water Works. One Sheet.

B. Interviews

Eugene Leson, interviewed by Jason Leggett, Youngstown, Ohio 21 April 1997.

C. Bibliography

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